Kentucky
Epidemiologic Notes & Reports

CABINET FOR HEALTH SERVICES
DEPARTMENT FOR PUBLIC HEALTH
DIVISION OF EPIDEMIOLOGY

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To the readers of Epidemiologic Notes and Reports:

As of June 11, 1997, I bid a fond farewell to Kentucky and to all those human services professionals and other individuals who have worked with me in many different capacities since I came to the Commonwealth in September, 1985. The personal and professional relationships made during my tenure will endure.

I am very proud of the accomplishments achieved by our staff in the Division of Epidemiology -- in cooperation with partners in the local health departments and throughout the human services system. I am confident that they will continue this track record in future years. The following is an incomplete, but illustrative, list of accomplishments:

- Raised the up-to-date immunization levels of two year olds in the state from less than sixty to over eighty percent in six years, despite a costlier and more complex immunization schedule;
- Cut the tuberculosis case rate in half since 1982, despite a national upsurge in TB during much of that same time period;
- Put into place a team of sixty local health department professionals trained to conduct epidemiologic investigations and answer questions about communicable diseases;
- Responded to the epidemic of HIV infection by providing a massive amount of public information, making counseling and testing available in every Kentucky county, establishing a network of twelve full-time social workers to coordinate care for persons living with HIV, and launching a statewide community planning initiative for HIV prevention;
- Put into place a community health education program in local health departments statewide, reaching hundreds of thousands of Kentuckians with messages about healthier lifestyles;
- Organized Kentucky's first tobacco prevention and control program;
- Responded to the General Assembly's mandate by offering breast cancer screening to low-income women through local health departments -- and finding an average of 30 cancers per year at an early and curable stage;
- Offered nursing and nutrition services, above those available from physicians, to help persons with diabetes, high blood pressure, and high cholesterol avoid serious heart and blood vessel complications;
- Analyzed and published results from Kentucky's first state health interview and examination survey;
- Joined with the University of Kentucky to create the Kentucky Injury Prevention and Research Center, to address the problems of motor vehicle injuries, farm injuries, occupational deaths, and other serious injuries;
- Conducted routine surveillance on over sixty different diseases and conditions of public health importance, and investigated over one hundred outbreaks; and
- **(perhaps most importantly)** Answered over two thousand telephone inquiries each year from people who are concerned about various threats to the public's health.

I am also proud to announce that this month, we will see the publication of the fortieth professional journal article authored or coauthored by a member of our Divisional staff, since 1985. The most recent article describes a comparison of reportable disease data with hospital discharge data and will appear in the *Journal of the Kentucky Medical Association*.

In May, we succeeded in modernizing our reportable disease regulation (902 KAR 2:020). A complete account of the changes will appear in the July issue of *Kentucky Epidemiologic Notes and Reports.*

Finally, I would like to thank the entire staff of the Division of Epidemiology for their dedication and commitment to our goal of healthy people in a healthful environment and for my opportunity to lead them toward this goal. Special thanks to Joyce Bothe, my assistant director and editor of this publication, for her devoted service. She will continue in these capacities while the Department searches for a new state epidemiologist and Division Director.

I wish each of you the satisfaction that I have enjoyed in these years of service to the public.

Reginald Finger, MD, MPH
State Epidemiologist

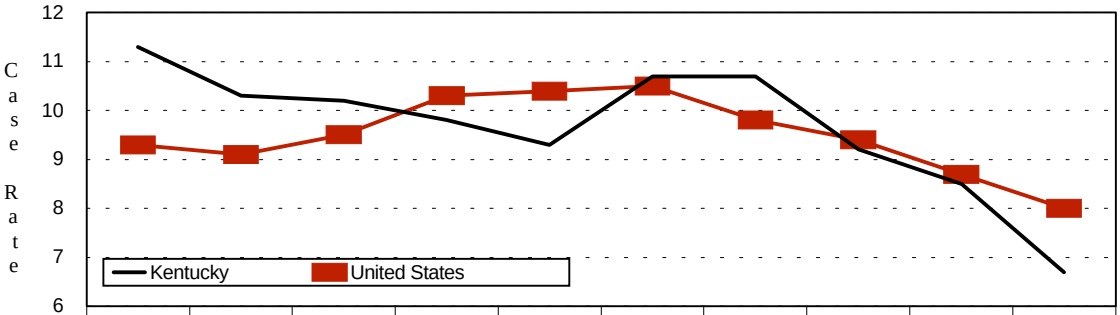
Tuberculosis in Kentucky, 1996

Kentucky reported 259 cases of tuberculosis (TB) during 1996, a decrease of 68 cases from the previous year. In 1996, 20.8% fewer cases were reported than in 1995, representing the third consecutive decline. With a 1996 statewide case rate of 6.7 per 100,000 population, Kentucky falls below the 1996 national TB case rate of 8.0 (Figure 1).

TB LEGISLATION, 1996

The 1996 Kentucky General Assembly enacted legislation introduced by Representative Tom Burch which revised the state's TB Control Law (KRS Chapter 215) to: require treatment to be directed to persons with active TB who may not be currently infectious but would become so if not regularly treated; facilitate timely and appropriate clinical services for recalcitrant and drug-resistant TB patients; require physicians to order drug susceptibility testing on initial isolates from all patients with active TB and require a repeated test after three months if the patient continues to produce positive cultures; clarify the responsibility of the individual with active TB for the prevention of transmission to others; and strengthen the recalcitrant TB patient laws.

Figure 1. Kentucky vs. United States Tuberculosis Case Rates, 1986-1996



	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Kentucky	11.3	10.3	10.2	9.8	9.3	10.7	10.7	9.2	8.5	6.7
United States	9.3	9.1	9.5	10.3	10.4	10.5	9.8	9.4	8.7	8

Case Rate = # of cases / 100,000 Population

The Department for Public Health has amended the administrative regulation relating to TB (902 KAR 2:090) in order to implement revisions made to the TB Control Law (KRS Chapter 215) by the 1996 legislature. The amendment will enable the Kentucky Department for Public Health to more effectively control TB. Highlights of the amended administrative regulation were published in the February 1997 issue of *Kentucky Epidemiologic Notes and Reports.*

TB OCCURRENCE DEMOGRAPHICS

In 1996, Kentucky had a 63/37 male to female tuberculosis case ratio, equal to the case ratio in 1995. In 1996, the number of reported cases among males was 163, and the number of female cases was 96.

The number of cases classified as nonwhite, non-Hispanic decreased from 73 cases in 1995 to 42 in 1996. A decrease of this magnitude can be attributed to many factors, and will continue to be monitored to determine if this represents a trend or a statistical aberration. Further analysis revealed a continued disproportionate racial impact with the nonwhite tuberculosis case rate (15.1 per 100,000) more than two times higher than the tuberculosis case rate (6.1 per 100,000) for the white population.

Geographic distribution of Kentucky's tuberculosis cases in 1996 is presented by Area Development District (ADD) in Figure 2 (see page 6). The Lake Cumberland ADD (Adair, Casey, Clinton, Cumberland, Green, McCreary, Pulaski, Russell, Taylor, and Wayne), recorded the highest regional rate (15.6 per 100,000). Clinton County, reporting ten cases, had the highest case rate for the year (107.4 per 100,000). This county reported a highly virulent strain of TB.

TB OCCURRENCE BY AGE

The highest incidence of TB in Kentucky (21 per 100,000 population) again occurred in the 65+ age group (Figure 3, shown on page 4). This age-specific rate exceeds the 1995 national rate of 16.0 per 100,000. However, this number reflects a downward trend in Kentucky's TB case rate in this age group.

65+ population	**Year**	**1993**	**1994**	**1995**	**1996**
Case Rate	Rate	40.6	32.2	26.3	21.0

With a case rate of 4.9 per 100,000 in 1996, the 0-4 age group incidence rate increased from 3.0 per 100,000 in 1995. This is slightly higher than the 1995 national case rate of 4.7 per 100,000 among this age group.

Throughout the last four years, the age group reporting consistent increase or stability in case rate is the 25-44 age group. In 1996, this category represented 21% of the total cases, in 1995, 20%, and in 1994, 19%. Nationally, such a demographic shift is attributed to the greater likelihood of HIV infection among persons 20-44 years of age. However, Kentucky's observed shift in morbidity to a younger age may partially be the result of other factors prevalent in this age group, such as homelessness, alcohol or other drug abuse, and the influx of migrant workers.

RISK FACTORS IN KENTUCKY

The Centers for Disease Control and Prevention (CDC) reports infection with HIV has significantly contributed to recent national increases in TB. Kentucky's local health departments report that 11 TB patients in 1996 had a positive HIV test. This is a significant increase from the one HIV-TB co-infected case reported in 1995. These 1996 figures, however, are incomplete as 41% of TB patients were not offered HIV counseling and testing. Out of those offered HIV screening, 47% refused the test.

The *Morbidity and Mortality Weekly Report* (*MMWR*) October 25, 1996, offered an important clinical update "Impact of HIV Protease Inhibitors on the Treatment of HIV-Infected Tuberculosis Patients with Rifampin." Protease inhibitors interact with rifampin and rifabutin, causing complications in the treatment of an HIV-TB co-infected person. For HIV-TB co-infected persons who have not started therapy with a protease inhibitor, it is recommended that TB treatment be completed before starting protease inhibitor therapy. For HIV-infected patients with TB who are currently undergoing protease inhibitor therapy, three different management options are offered by CDC. The management of these patients is complex; local health department TB staff and the TB Control Program in Frankfort can provide additional information on the treatment of these cases.

CDC has identified homelessness as a risk factor for TB, and Kentucky continues to require that tuberculosis patients who are homeless be so identified. The 1996 data indicate 15 TB cases (5.8%) were identified as homeless. In order to successfully treat these tuberculosis cases, every effort is made to assist the patient in obtaining temporary housing. Directly observed therapy (DOT) is used in conjunction with this housing assistance.

The 1996 national data from CDC regarding TB suggest that approximately 37% of the morbidity in the United States (U.S.) is found in foreign-born persons. In Kentucky, 18 (6.9%) of the tuberculosis cases reported in 1996 are foreign-born, showing a small decline from the 9.8% foreign-born cases in 1995. Foreign-born individuals seeking medical attention for respiratory illness should be evaluated for TB. An inadequate treatment regimen may have been obtained in the country of origin, and public or private health care providers should maintain a high index of suspicion for drug resistance in this population.

Although the Hispanic migrant population is still small in comparison to other states, it is growing in Kentucky. In 1996, nine cases in the Hispanic population were reported, in 1995, four cases were reported, and in 1994, seven cases were reported. Hispanic workers from the East Coast Migrant Stream and the Midwest Migrant Stream converge in Kentucky to work the numerous farms, primarily tobacco. The migrant population poses numerous health issues that are new to local health departments. Language and cultural barriers create difficulties in communication between the health care worker and the migrant, and the majority of migrant workers are unaware of the services provided by the local health departments. A migrant may be infected with tuberculosis disease for a long period of time prior to seeking health care.

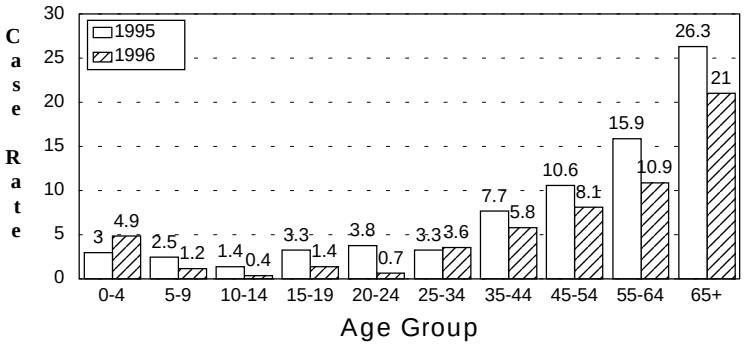
DRUG RESISTANCE

One of the most serious aspects of the rising tuberculosis problem has been the emergence of multi-drug resistant tuberculosis (MDR-TB). In response, the state Tuberculosis Control Program monitors all tuberculosis drug susceptibility reports submitted by the local health departments. In 1996, the local health departments reported 155 drug susceptibility tests on initial isolates (60% of the cases). Of those tested, 18 (11.6%) were resistant to at least one anti-tuberculosis drug. Six (3.9%) were reported with resistance to both isoniazid (INH) and rifampin (RIF). A comparative analysis of the initial drug susceptibility studies reported to TB Control during 93, 94, and 95 may be found in Figure 4. The following list reveals selected individual drug resistance for Kentucky during 1996.

Isoniazid (INH)	7.7%	Rifampin (RIF)	3.9%
Ethambutol (EMB)	0.6%	Streptomycin (SM)	3.2%

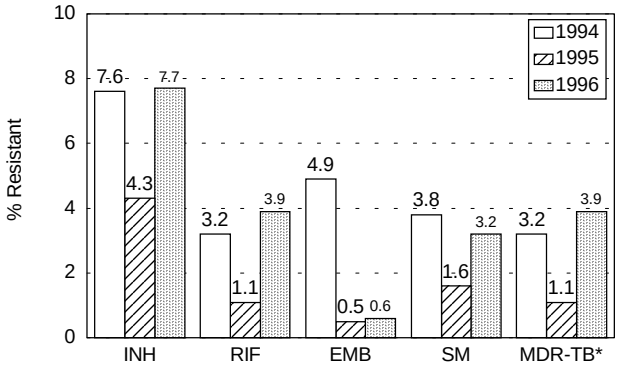
(note that Pyrazinamide (PZA) is not routinely tested by the KY State Laboratory)

Figure 3. Tuberculosis by Age Groups, Kentucky 1995, 1996



Case rate= # of cases / 100,000 Population

Figure 4. Tuberculosis - Initial Isolates, Kentucky 1994-1996



1994-n =182, l995-n=188, 1996-n=155

INH	isoniazid
RIF	rifampin
EMB	ethambutol
SM	streptomycin
MDR -TB	Resistant to at least INH & RIF
PZA	pyrazinamide is not routinely tested by the KY State Lab

Due to the severe public health problems multi-drug resistant TB presents, the Kentucky TB Control Program endorses the CDC recommendation for a universal application of an initial four drug regimen (i.e., INH, RIF, PZA and EMB or SM).

DIRECTLY OBSERVED THERAPY

Preventing the emergence of drug resistance and ensuring the completion of therapy are the two main goals of the Directly Observed Therapy (DOT) program. This program requires a public health worker to monitor patient adherence to treatment by observing the ingestion of anti-TB medication. The State TB Control Program allocates funds to place DOT staff (nurses, outreach workers, etc.) in local health departments in most areas of the state. These positions are intended to serve the community by performing numerous functions in the field, including delivering and observing therapy for patients, monitoring patients for adverse drug reactions, conducting contact investigations, assisting in screening programs, and providing TB education services. DOT is proven effective in the successful treatment of TB, and is recommended for all TB patients. Physicians may contact their local health departments to initiate this service for their TB patients.

PUBLIC HEALTH SUPPORT

Public health support available to private physicians includes a full range of TB-related services such as diagnostic assistance and treatment for cases and contacts. Public health officials, TB nurses and outreach staff are able to provide the necessary community follow-up to track, treat, and facilitate secure isolation (as a last resort) for difficult treatment scenarios such as the recalcitrant TB patient; the homeless, infectious TB patient; or the injecting and other drug or alcohol abuse patient. Health department TB outreach staff also provides DOT for all TB patients.

Public health TB staff is adept at monitoring response to therapy. If the patient fails to improve clinically, or fails to convert his or her sputum (from positive to negative) within three months of therapy, additional steps may be needed such as court-ordered DOT and follow-up drug susceptibility studies.

Contact the TB Control Program in Frankfort at (502) 564-4276 with questions regarding current TB treatment literature, adjuncts to therapy, DOT, or access to community-based follow-up.

This article was contributed by staff of the Kentucky TB Control Program: Amanda Gibbons and Gene Simmons, MPH.

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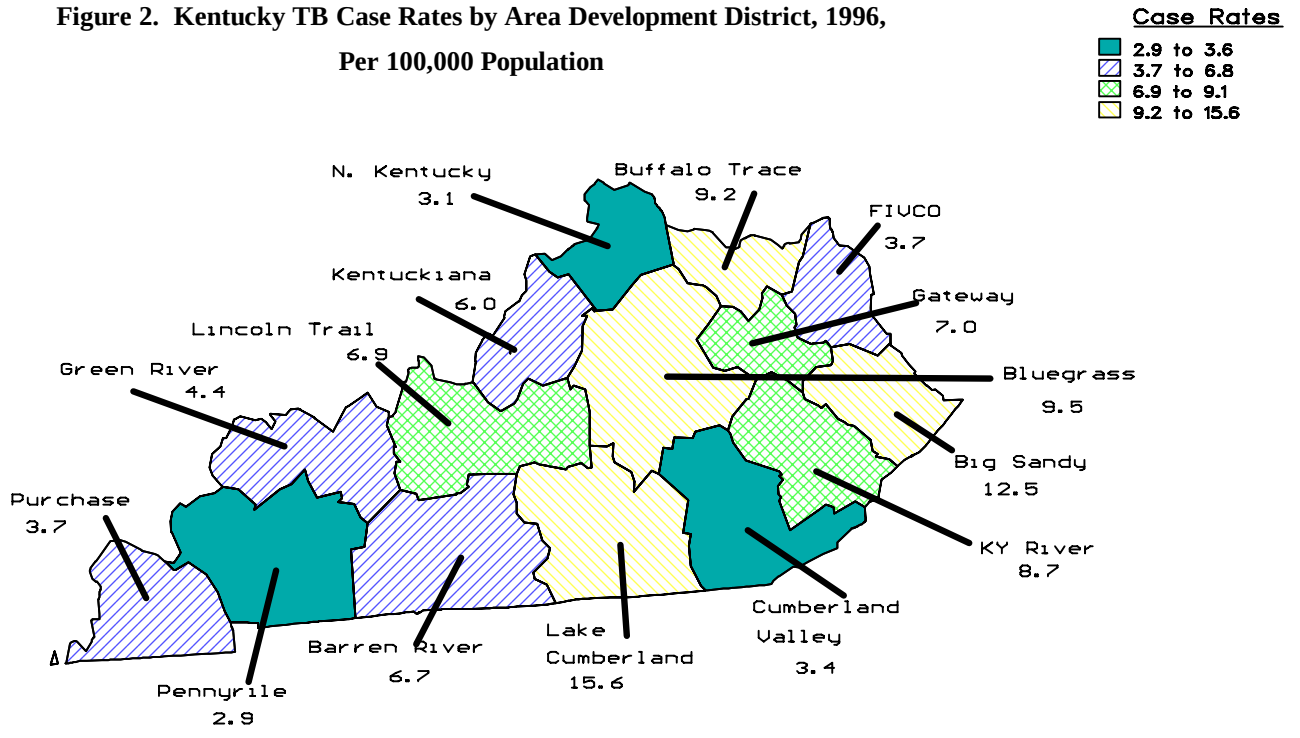
Figure 2. Kentucky TB Case Rates by Area Development District, 1996, Per 100,000 Population



Of the 67 confirmed cases, 22 were at Fort Campbell. Of the remaining 45 cases, 8 were preceded by a day or more by a confirmed case in the same household, and therefore were classified as secondary household cases. Fourteen additional cases were preceded by a day or more by a confirmed case in the same school, so were classified as secondary cases in schools. Two others were similarly classified as secondary cases, in a family daycare arrangement. The remaining 21 cases, as well as the 22 presumptive cases, were judged as likely to have had a similar distribution, but specific information was not available. No transmission in licensed day cares, or from food served by ill foodhandlers could be confirmed.

Inspection at the schools revealed that soap and paper towels were often not available in the restrooms. During a visit to a daycare center where one case had been identified, no soap was available for the staff's use at the diaper changing area. Instead, it was locked in a closet. A table was being used both to serve food and to change diapers.

CONCLUSION AND RECOMMENDATIONS

This outbreak is a communitywide, person-to-person transmitted outbreak of shigellosis not unlike several others investigated in Kentucky over the past few years.[1,2,3,4] The important settings of transmission appear to be schools, households, and family daycare arrangements. Although daycare centers and food establishments are not implicated thus far, they do represent potential for further spread based on findings in other outbreaks. Lack of routine handwashing, especially in settings where soap and towels are not readily available, is the primary risk factor for transmission of *Shigella*.

reactant of Scabies

Adapted from *MMWR*, Vol. 44, No. 25, June 30, 1995

As of June 25, public health authorities have identified 296 persons with viral hemorrhagic fever (VHF) attributable to documented or suspected Ebola virus infection in an outbreak in Zaire; 79% of the cases have been fatal, and 90 (32%) of 283 cases in persons for whom occupation was known occurred in health-care workers.

A case was defined as confirmed or suspected VHF in a resident of Kikwit or the surrounding Bandundu region identified since January 1. The median age of persons with VHF was 37 years (range: 1 month-71 years); 52% were female. Based on preliminary analysis of 66 cases for which data were available, the most frequent symptoms at onset were fever (94%), diarrhea (80%), and severe weakness (74%); other symptoms included dysphagia (41%) and hiccups (15%). Clinical signs of bleeding occurred in 38% of cases.

Among 173 household members of the 27 primary household cases, there were 28 (16%) secondary case-patients. The risk for developing VHF was higher for spouses of the primary household case-patients than for other household members, and for adults (>17 years).

Needle sticks or surgical procedures during the 2 weeks before illness were reported for two of the 27 primary household case-patients. Of the 28 secondary case-patients, 12 had direct contact with blood, vomitus, or stool of the ill person during hospitalization (i.e., later stages of illness), and 17 shared hospital beds.

EDITORIAL NOTE: The incidence of VHF related to Ebola virus in Kikwit has diminished following the institution of interventions including 1) training of medical and relief personnel on the proper use of protective equipment, 2) initiation of aggressive case-finding; and 3) educational measures in the community (e.g., pamphlets and public announcements). However, cases continue to occur, and each case has the potential to be a source for additional infections. Therefore, ongoing measures including continued intensive surveillance, training activities, and public education are necessary to contain the epidemic.

To maximize prevention and control measures, prompt laboratory diagnosis is an important component of surveillance. Other activities include ecologic studies to identify the natural reservoir of the virus; these studies are focusing especially on mammals, nonmammalian vertebrates, and arthropods.

Transmission associated with health-care providers and caregivers has been a prominent feature of the current and previous VHF outbreaks in Africa attributable to Lassa, Marburg, Ebola, or Crimean-Congo hemorrhagic fever viruses. In some outbreaks, transmission from patient to patient within hospitals has been associated with the reuse of unsterile needles and syringes. As in previous outbreaks, high rates of transmission in this outbreak have occurred from patients to health-care workers and to family members who provided nursing care without appropriate barrier precautions to prevent exposure to blood, other body fluids, vomitus, urine, and stool. Based on findings in this report, the risk for transmitting infection from patients appears to be highest during the later stages of illness, which is characterized by vomiting, diarrhea, shock, and often hemorrhage. However, a small number of cases of VHF in Zaire have been reported in family members whose only contact with an infected person was in the domestic setting within a few days after onset of illness.